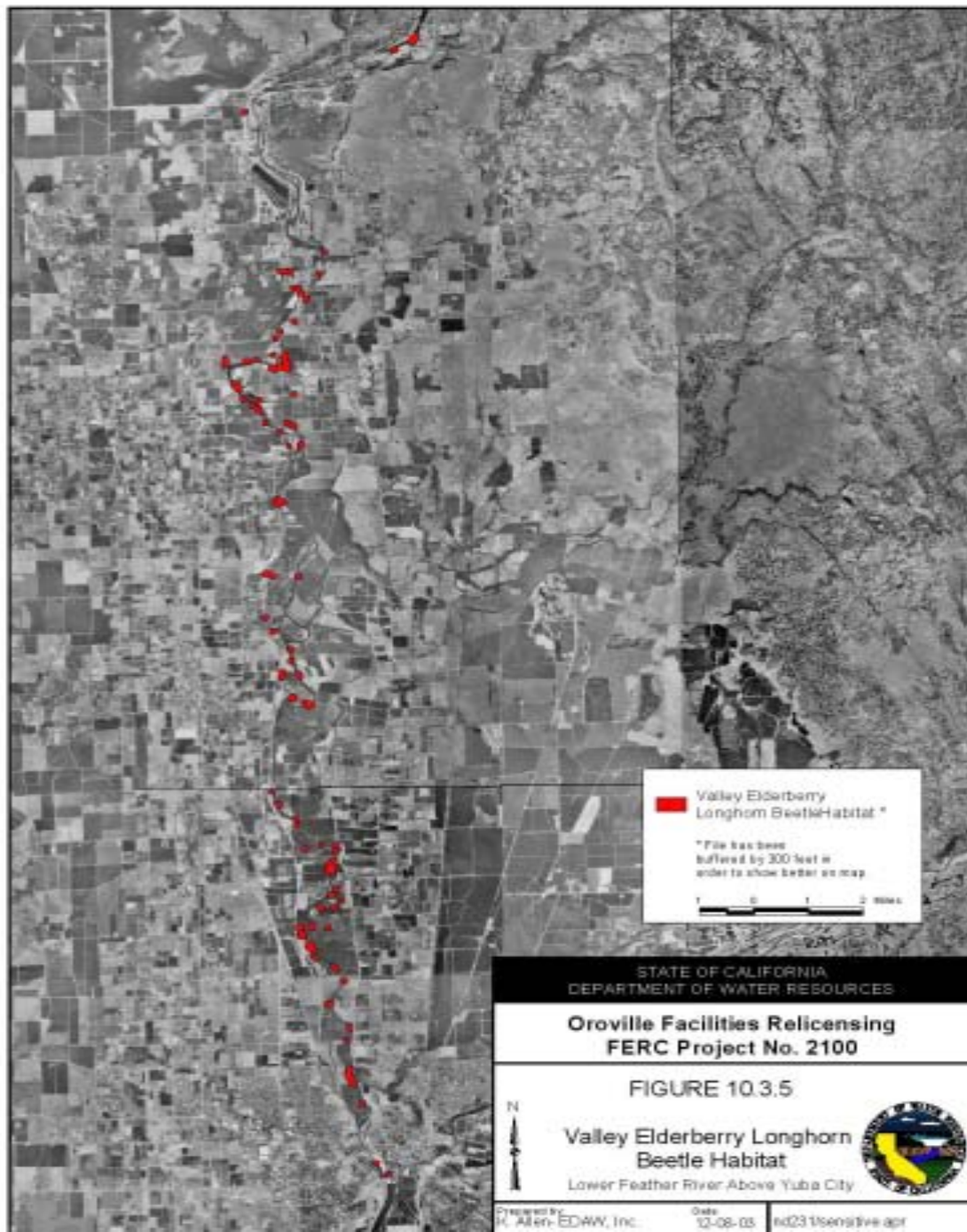
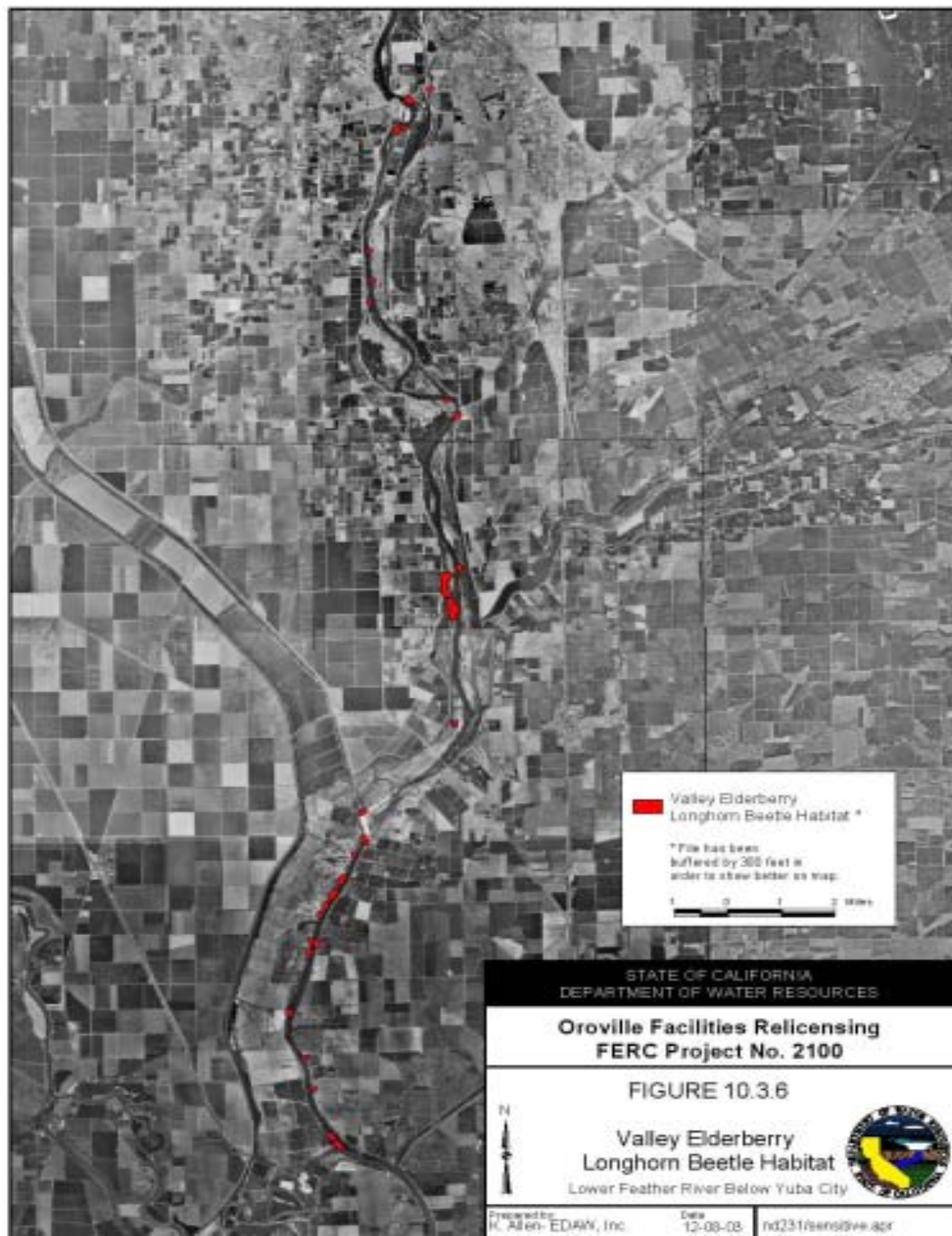


VALLEY ELDERBERRY LONGHORN BEETLE HABITAT AND POPULATION SURVEYS-RESULTS

- ▶ **Feather River below the Project Area**-All elderberry shrubs visible during boat based botanical surveys along the Feather River below the project area were mapped.
- ▶ In general, the same pattern was observed along this portion of the Feather River as that observed within the OWA with elderberry shrubs uncommon or absent from the lower portion of levees or other areas subject to a high water table.
- ▶ Observations along the Feather River indicate that elderberry shrub densities are lower and far more disjunct than those present within the OWA.





VELB IMPACT ANALYSES

- ▶ **Lake Oroville**-Terrain and location preclude any future development in this area.
- ▶ **Oroville Dam to Table Mountain Boulevard**-Several potential project related effects to VELB were identified within this area including:
 - Off-road vehicle use
 - Pesticide use
 - Grading for roads and fuelbreaks
 - Materials storage
 - Additional recreation development

VELB IMPACT ANALYSES

- ▶ **Thermalito Forebay and Afterbay**-Elderberry shrubs are generally absent from the Thermalito Forebay and Afterbay areas. Further, edaphic factors limit the potential establishment of elderberries within these areas.
- ▶ **Oroville Wildlife Area**-Levee and associated road maintenance activities can conflict with the protection of VELB habitat.
 - Road grading within 25 feet of the drip-line of elderberry shrubs
 - Mosquito abatement practices (fogging from levee roads)
 - Emergency levee repairs related to flood damage
 - Herbicide use on levees
 - Pruning of elderberry shrubs overhanging roads
 - Off road vehicle use
 - Eradication/control of non-native plant species
 - Additional recreation development (boat ramps, campgrounds, roads, parking areas)

VELB IMPACT ANALYSES

- ▶ Feather River below the Project Area
- ▶ No changes in operations or downstream flow regimes have been identified.
- ▶ Future changes from baseline conditions could affect the quantity and quality of VELB habitat downstream along the Feather River corridor in either a positive or negative manner.

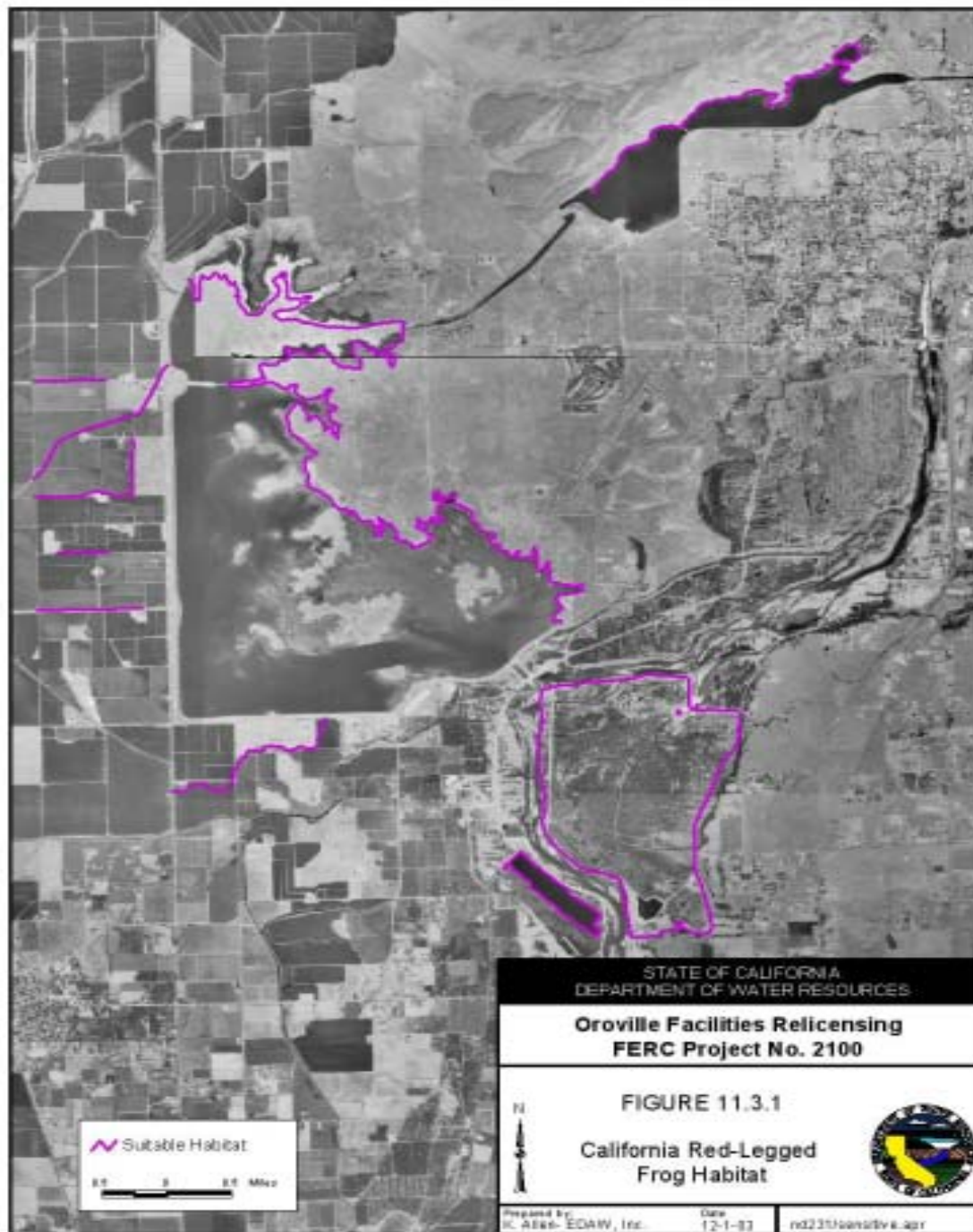
CALIFORNIA RED-LEGGED FROG HABITAT SURVEY - METHODS

- ▶ Pre-survey GIS mapping of wetlands and riparian habitat
- ▶ Visual habitat surveys were conducted throughout all wetland/riparian areas delineated within the GIS maps.
- ▶ All accessible wetland areas within the Oroville Facilities boundary were surveyed.
- ▶ In areas that could not be completely surveyed on foot or by vehicle, a boat was utilized.
- ▶ Data recorded on USF&WS habitat data sheets



CALIFORNIA RED-LEGGED FROG HABITAT SURVEY - RESULTS

- ▶ No CRLFs were identified during the course of the CRLF habitat surveys or other relicensing field data collection efforts.
- ▶ Areas within the project area of potential red-legged frog habitat include
 - Portions of the Thermalito Afterbay and Forebay
 - Portions of the OWA near Feather River and in dredger ponds
 - Flood detention area within the OWA
 - Agricultural ditches west and south of the Afterbay



CALIFORNIA RED-LEGGED FROG IMPACT ANALYSES

- ▶ Potentially suitable CRLF habitat is present within the project area. However, several factors may serve to limit CRLF use of these habitats including;
 - active management for or future stocking of non-native predatory fish
 - high populations of bullfrog (direct competitor and predator)
 - high water surface elevation fluctuations within the Thermalito Afterbay increasing the distance from cover to water for this highly aquatic species, subjecting CRLF to predation
 - unseasonably cold water in the Thermalito Forebay requiring increased basking to maintain body temperature (basking frogs are exposed to predation)
 - habitat fragmentation (little habitat connectivity between areas of potential habitat within the project area or between known populations and the project area)
 - seasonably high recreation use (disturbance/displacement, habitat degradation and loss)

CALIFORNIA RED-LEGGED FROG IMPACT ANALYSES

- ▶ Examples of Resource Actions which could serve to improve CRLF habitat within the project area include:
 - limiting the introduction or spread of non-native predators and plant communities
 - providing increased habitat areas with less extreme water surface elevation fluctuations
 - higher spring water temperature regimes in the Thermalito Forebay
 - improved connectivity of areas of suitable habitat, seasonally restrict recreational activity within areas of potential habitat from March through October
 - restricting future recreational developments within potentially suitable habitat
 - restoration of barren or degraded habitats (gravel piles in OWA) to suitable CRLF habitat
 - create/improve sidechannel, and backwater habitats.



GIANT GARTER SNAKE HABITAT SURVEY

- ▶ Uses similar habitat as the CRLF
- ▶ Habitat survey methods, results, and impact assessment very similar to those just presented for the CRLF

BALD EAGLE HABITAT AND POPULATION SURVEYS-METHODS

- ▶ 2002 and 2003 breeding seasons surveys were conducted on Lake Oroville, Diversion Pool, Thermalito Forebay, Thermalito Afterbay, and along the Feather River within the study area.
- ▶ Surveys were primarily boat based.
- ▶ Surveys involved
 - inspection of potentially suitable nest trees for nests
 - observation and mapping of areas where adult eagles were present
 - following adult eagles to locate nest and determine foraging areas
 - Repeated visits to areas of regular bald eagle activity occurred whether or not a nest had been identified.
 - All active nest territories were visited at least once per month during the breeding season.
 - A January 2003 midwinter bald eagle census was conducted within the project area in coordination with the statewide effort on the same date.



BALD EAGLE HABITAT AND POPULATION SURVEYS-RESULTS

Category	2002	2003
# of active territories	3	3
# of occupied territories	1	2
Production/active territory	0.7	1.3
Production/occupied territory	2.0	2.0



BALD EAGLE IMPACT ANALYSES

- ▶ ID of a new nest in 2002 required prompt evaluation of potential impacts for ESA compliance.
- ▶ Potential recreation related impacts were identified
- ▶ Both USFWS and DFG were consulted
- ▶ DWR and DPR implemented recreation management changes based on consultation including:
 - designation of a primary zone wherein human activity was restricted during the breeding season
 - shoreline recreation closure
 - relocation of recreation facilities
 - avoidance of new recreational development
 - development of territory management plans for all currently active territories



STATE AND FEDERAL SPECIES OF CONCERN - METHODS

- ▶ During the course of other Oroville Relicensing surveys, all observations of State and Federal Species of Concern were mapped.
- ▶ Data collection includes areas within, adjacent, and downstream from the project area.
- ▶ Additional information including number of individuals, age, activity, features, and date were recorded in the field and transferred to a GIS database at the end of each field day.
- ▶ All species of concern sightings recorded were made incidental to other relicensing studies.



STATE AND FEDERAL SPECIES OF CONCERN - RESULTS

- ▶ Between February 21, 2002 and September 19, 2003, 1,470 observations of 26 species of State or Federal Species of Concern were added to the GIS database. Species occurrences in order of decreasing number of observations are:
 - American white pelican (597)
 - double-crested cormorant (300)
 - osprey (180)
 - black tern (82)
 - Northern harrier (72)
 - white-faced ibis (42)
 - snowy egret (32)



STATE AND FEDERAL SPECIES OF CONCERN - RESULTS

- white-tailed kite (30)
- golden eagle (28)
- loggerhead shrike (20)
- lark sparrow (15)
- Cooper's hawk (13)
- tricolored blackbird (10)
- California gull (10)
- American bittern (9)
- Western pond turtle (6)
- black-crowned night heron (6)
- sharp-shinned hawk (6)
- common loon (4)
- prairie falcon (2)
- yellow-breasted chat (2)
- yellow warbler (2)
- short-eared owl (1)



STATE AND FEDERAL SPECIES OF CONCERN - RESULTS

ringtail (1)

- burrowing owl (1)
- Barrow's goldeneye (1)
- A brief description of the status, habitat requirements, and temporal and spatial distribution of special status species is included in the report. Maps identifying the distribution of each species are presented in Appendix A.

VERNAL POOL INVERTEBRATE HABITAT ASSESSMENT - METHODS

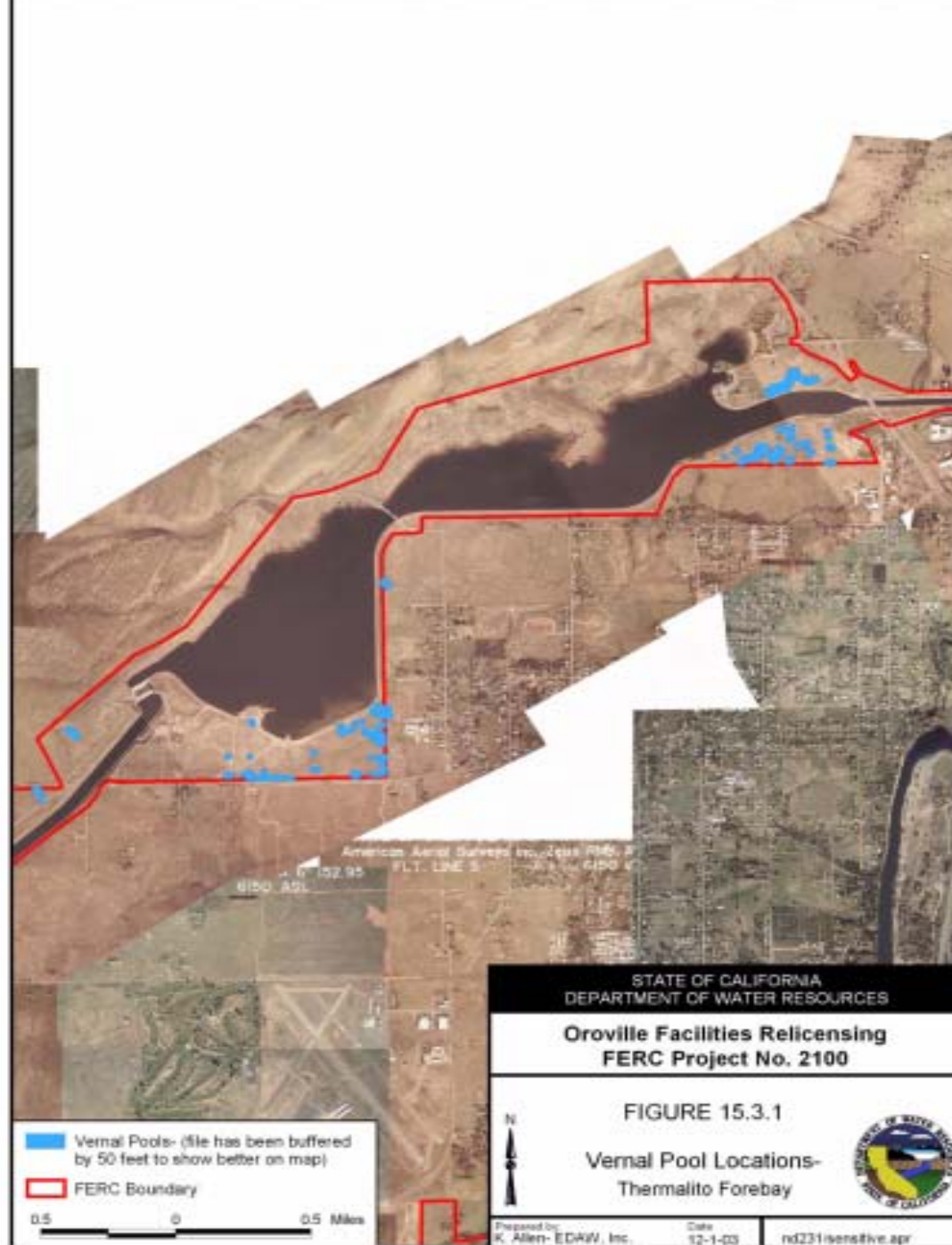
- ▶ Pre-survey data collection involved checking for known occurrences of listed eubranchiopods within or adjacent to the project area and included:
 - USFWS Endangered Species Office and other professionals
 - DFG California Natural Diversity Database (2000) was checked for reported occurrences.
 - The USFWS National Wetland Inventory was checked for recorded wetlands
- ▶ Field survey consisted of walking a 10-meter grid pattern through suitable areas
- ▶ Each pool was located with the GPS and mapped in ArcView GIS.
- ▶ Outlines of pools were digitized on rectified aerial photographs in ArcView for acreage amounts
- ▶ Only areas within the project boundary or immediately adjacent areas where project effects to individual pools are possible were considered in this assessment.




4. 24. 2002


VERNAL POOL INVERTEBRATE HABITAT ASSESSMENT -RESULTS

- ▶ Within the project boundary, there are 230 vernal pools totaling 17.2 acres, ranging from 0.002 to 3.9 acres in size
- ▶ 167 of these pools are around the Thermalito Afterbay, with the remaining 63 pools around the Forebay
- ▶ Approximately 80 percent of the pools within the study area are formed by the interruption of natural runoff flow patterns by some artificial structure, such as a road, berm, weir, or levee.
- ▶ Approximately 60% of the pools occur in two clusters, the south end of Wilbur Road (with 83 pools) and the South Forebay boat ramp area (with 47 pools).





 Vernal Pools- (file has been buffered by 50 feet to show better on map)

 FERC Boundary

2000 0 2000 Feet

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

Oroville Facilities Relicensing
FERC Project No. 2100



FIGURE 15.3.2

Vernal Pool Locations-
North Thermalito Afterbay



Prepared by: _____ Date: _____



VERNAL POOL INVERTEBRATE IMPACT ANALYSES

- ▶ Vernal pool specialists evaluated each vernal pool to identify potential project related impacts including impacts associated with sedimentation, earth moving, disking, off-road vehicle use, and pesticides
- ▶ Opportunities for modification of current maintenance practices, land use, and recreational use were identified
- ▶ Per the Study Plan, DWR (in cooperation with DFG, DPR, and CALTRANS) developed a management plan for areas containing vernal pools
- ▶ The goal of this plan is to insure that areas containing vernal pools are managed in a coordinated fashion to protect, maintain, or enhance vernal pool habitats
- ▶ USF&WS was informally consulted during the development of this plan
- ▶ The final Vernal Pool Land Management Plan will be submitted to USF&WS and contains modification of existing maintenance and land use practices in areas adjacent to vernal pool habitats including changes to reduce or eliminate potential impacts resulting from sedimentation, earth moving, disking, off-road vehicle use, and pesticides.

SP-T2 SUMMARY

- ▶ 12 wildlife species protected under State or Federal ESA may occur in the project vicinity.
- ▶ Potentially suitable habitat for all 12 of these species is present within the study area.
- ▶ Potential project related impacts were identified related to bank swallow and bald eagle. These potential impacts required consultation under the State and/or Federal Endangered Species acts and modification of current and future actions to minimize or avoid impacts
- ▶ Opportunities for improved habitat management related to peregrine falcon, valley elderberry longhorn beetle, Conservancy fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp were identified.
- ▶ These opportunities are being explored through the informal consultation process and may result in modification of maintenance practices or recreational use under the current FERC license.